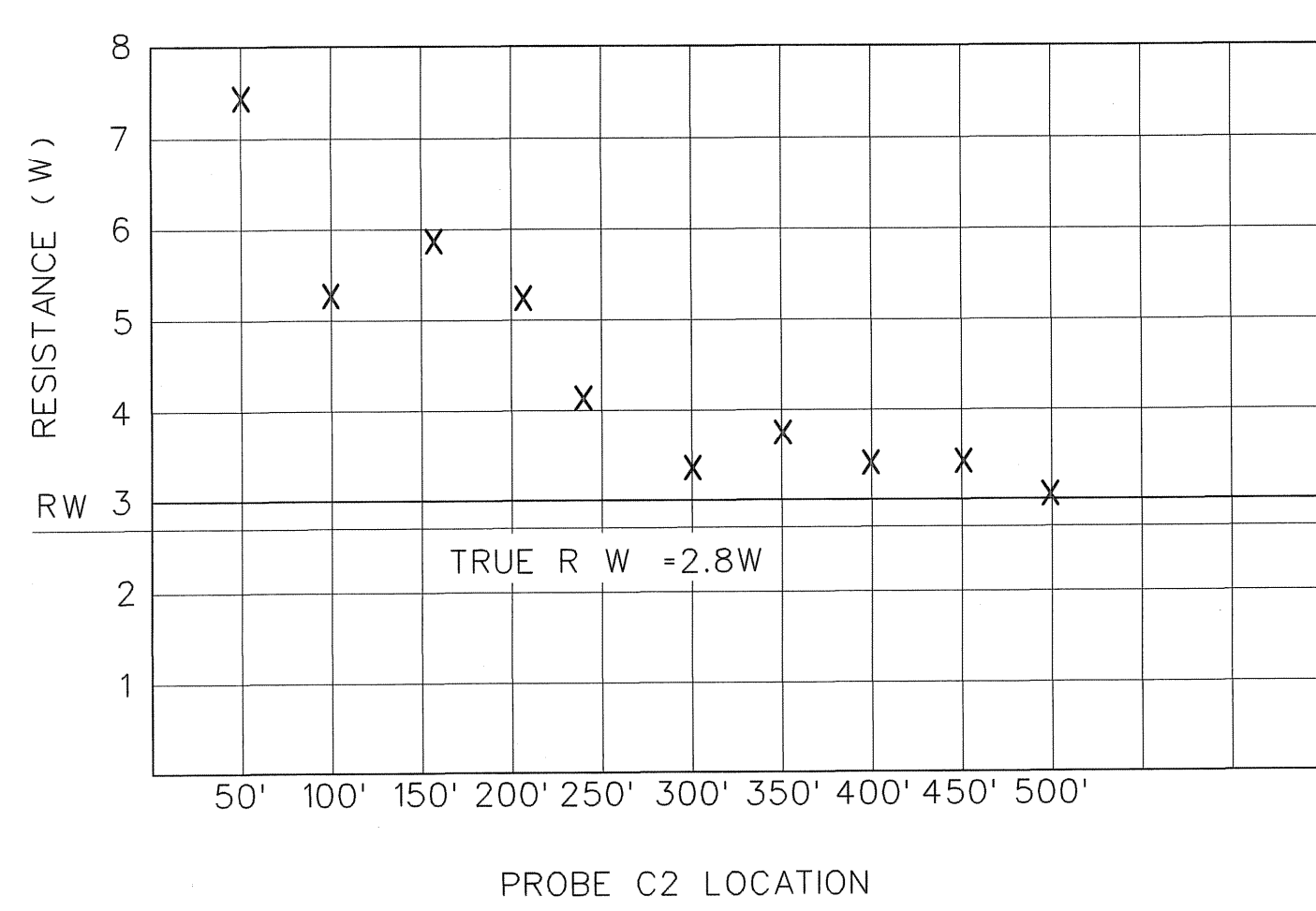


1  
E003  
EARTH RESISTANCE MEASUREMENT  
AT A TYPICAL FACILITY  
NOT TO SCALE

NOTE:  
IT MAY NOT BE NECESSARY TO  
PLOT THE FULL 500 FT PLOT  
ENOUGH POINTS TO ACCURATELY  
DETERMINE WHERE CURVE LEVELS OFF.



C2 PROBE DISTANCE	P2 PROBE DISTANCE (.62 X C2)	RESISTANCE METER READING W
50'	21'	7.5
100'	62'	5.2
150'	93'	5.9
200'	124'	5.2
250'	154'	4.2
300'	185'	3.4
350'	217'	3.8
400'	248'	3.4
450'	279'	3.4
500'	310'	3.1

DEPTH OF REFERENCE RODS  
RESISTANCE = 2.8 W

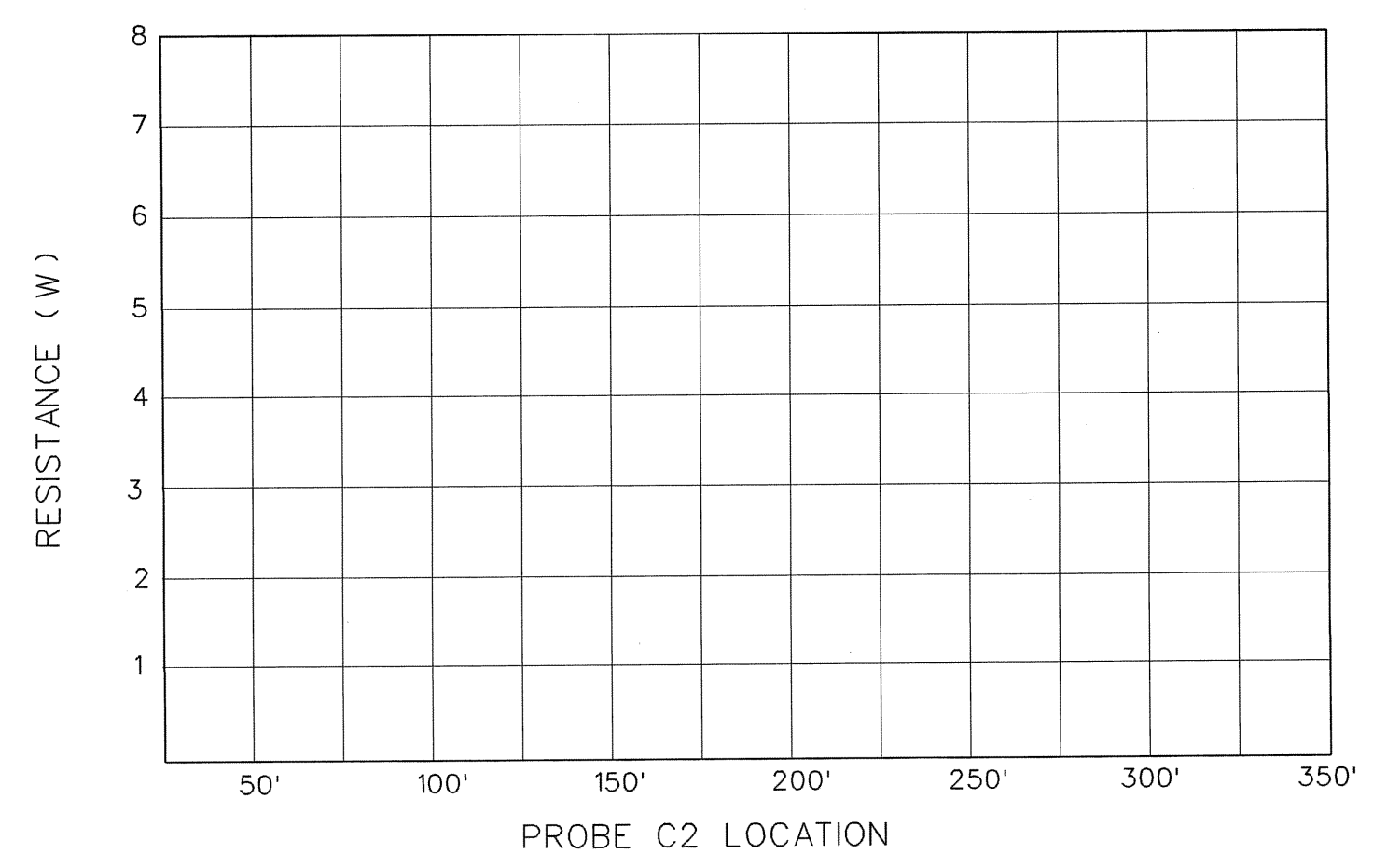
FIG. 3

SAMPLE OF A COMPLETE RESISTANCE  
MEASUREMENT WORKSHEET

METHOD "B"

(TO BE USED WHERE RELATIVELY LARGE GROUNDING SYSTEMS ARE INSTALLED).

- PROCEDURE: 1. NEW FACILITIES- THE RESIDENT ENGINEER, WITH THE ASSISTANCE OF A QUALIFIED ELECTRICIAN FURNISHED BY THE CONTRACTOR, SHALL PREPARE A NEAT SKETCH OF THE FACILITY GROUND SYSTEM OF THE NEW FACILITY SIMILAR TO THAT SHOWN IN FIG.1. THIS SKETCH TOGETHER WITH THE RESISTANCE MEASUREMENT SHEET (FIG. 2) WILL BECOME PART OF THE PERMANENT FACILITIES FILES. THE RESIDENT ENGINEER SHALL PROVIDE THE ORIGINAL TO THE FACILITIES CHIEF WITH A COPY TO THE PROJECT ENGINEER IN THE REGIONAL OFFICE.
2. EXISTING FACILITIES- EACH SECTOR OFFICE SHALL PREPARE A NEAT SKETCH OF THE FACILITY GROUND SYSTEM SIMILAR TO THAT SHOWN IN FIG. 1. THIS SKETCH TOGETHER WITH THE RESISTANCE MEASUREMENT WORKSHEET (FIG.2) WILL BECOME PART OF THE PERMANENT FACILITY FILES.
3. NEW AND EXISTING FACILITIES - MEASURE THE RESISTANCE OF THE ELECTRODE SYSTEM WITH AN INSTRUMENT DESIGNED FOR THE PURPOSE USING THE FALL OF POTENTIAL. METHOD (SUCH AS THE BIDDLE NULL BALANCE EARTH TESTER). PROCEED AS FOLLOWS:
- A. CONNECT THE TERMINALS MARKED C1 AND P1 TOGETHER AND CONNECT THEM TO THE ELECTRODE UNDER TEST
- B. POSITION THE C2 PROBE ALONG A LINE WHICH MAXIMIZES THE DISTANCE FROM THE ELECTRODE UNDER TEST AND FROM OTHER BURIED METALS SUCH AS UTILITY PIPES POWER AND SIGNAL CABLES, FUEL TANKS, ETC. IN CHOOSING THE DIRECTION FOR PLACEMENT OF THE C2 PROBE, EXAMINE THE CONFIGURATION OF THE ELECTRODE SYSTEM. FOR THE FACILITY AND DETERMINE THE LOCATION OF ALL SUCH BURIED METALS. THEN LOCATE THE PROBE AS FAR AS POSSIBLE FROM THESE METALS AS ILLUSTRATED IN FIG. 1 (FOR LONG SYSTEMS SUCH AS ALS, THE C2 PROBE LINE SHOULD BE RUN 90 DEGREES TO ALS) KEEP C2 & P2 LEADS SEPARATED AS FAR AS POSSIBLE.
- C. POSITION THE C2 PROBE AT DISTANCES AS SHOWN IN FIG. 3. RECORD THE METER READINGS FOR EACH C2 & P2 PROBE POSITION. (NOTE THAT THE P2 POSITIONS ARE 62% OF THE C2 POSITIONS). IT MAY NOT BE NECESSARY TO PLOT THE FULL 500'. PLOT ENOUGH POINTS TO ACCURATELY DETERMINE WHERE CURVE LEVELS OFF.
- D. NEXT, PLOT ON A GRAPH AS MANY RECORDED RESISTANCE READINGS VERSUS THE CORRESPONDING C2 PROBE POSITIONS AS NECESSARY TO DETERMINE WHERE CURVE LEVELS OFF. (FIG. 3)
- E. THE TRUE VALUE OF RESISTANCE CAN BE ESTIMATED BY EXTRAPOLATING THE CURVE TO ITS ASYMPTOTIC VALUE



C2 PROBE DISTANCE	P2 PROBE DISTANCE (.62 X C2)	RESISTANCE METER READING W
50'	31'	
100'	62'	
150'	93'	
200'	124'	
250'	165'	
300'	185'	
350'	217'	
400'	248'	
450'	279'	
500'	310'	

DEPTH OF REFERENCE RODS

RESISTANCE =  
DATE RECORDED

FIG. 2

RESISTANCE MEASUREMENT WORKSHEET

REV		APPROVED DATE	DESCRIPTION	JCN	REDLINE DATE	APVD
DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION ATO - TECHNICAL OPERATIONS EASTERN SERVICE AREA RCAG EARTH GROUND RESISTANCE TESTING INSTRUCTIONS AND PROCEDURES METHOD B						
SARASOTA		SARASOTA/BRADENTON INTL AIRPORT			FL	
REVIEWED BY	SUBMITTED BY		APPROVED BY			
	<i>Tom Little</i>		<i>Sharon E. Dugan</i>			
PROJECT ENGINEER	DESIGNED		TWC		ISSUED BY	
DRAWN	NKS		ENGINEERING SERVICES COMMUNICATIONS		DATE 04/01/2010 JCN 804826	
CHECKED					DRAWING NO SRQ-D-804826-E003	